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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,657	10/22/2003	Richard William Charm	060937-0139-US	6496

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EXAMINER

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/689,657	Applicant(s) CHARM ET AL.	
	Examiner Gregory E. Webb	Art Unit 1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-25 is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>080505,030204</u> <i>signed</i> | 6) <input type="checkbox"/> Other: _____ |

8/22/05

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 6-9, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanabe (US5968848).

Concerning the N-methyl-2-pyrrolidone and the sulfur-containing solvent, Tanabe teaches the following:

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8. The process for treating a substrate according to claim 5, wherein said aprotic polar solvents are dimethyl sulfoxide, N,N-dimethylformamide, N,N-dimethylacetamide, N-methyl-2-pyrrolidone, and 1,3-dimethyl-2-imidazolidinone. (see claim 8)

Concerning the choline derivative and the additional amine, Tanabe teaches the following:

Typical examples of hydroxylamines include hydroxylamine and N,N-diethylhydroxylamine. Typical examples of primary aliphatic amines include monoethanolamine, ethylenediamine, and 2-(2-aminoethylamino)ethanol. Typical examples of secondary amines include diethanolamine, dipropylamine, and 2-ethylaminoethanol. Typical examples of tertiary amines include dimethylaminoethanol, and ethyldiethanolamine. Typical examples of alicyclic amines include cyclohexylamine, and dicyclohexylamine. Typical examples of aromatic amines include benzylamine, dibenzylamine, and N-methylbenzylamine. Typical examples of heterocyclic amines include pyrrole, pyrrolidine, pyrrolidone, pyridine, morpholine, pyrazine, piperidine, N-hydroxyethylpiperidine, oxazole, and thiazole. Further, typical examples of lower-alkyl quaternary ammonium bases include tetramethylammonium hydroxide, trimethyl(2-hydroxyethyl)ammonium hydroxide(choline). Among these, aqueous ammonia, monoethanolamine, and tetramethylammonium hydroxide are preferred since they can be easily obtained and are safer.(see col. 4, lines 29-48)

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Concerning the amount of polar aprotic nitrogen containing solvent, Tanabe teaches solvent amounts ranging from 30-80% of the composition (see col. 5, lines 26-65).

Concerning the amount of choline, Tanabe teaches the use of this compound in amounts ranging from 0.2-10% (see col. 5, lines 26-65).

Concerning the amount of sulfur containing solvent, Tanabe teaches the use of this compound in amounts ranging from 30-80% (see col. 5, lines 26-65).

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Sahbari (US6475966).

Sahbari teaches compositions containing a polar aprotic solvent (i.e. DMSO; 20-90%), a dissolution enhancing base (i.e. choline; 0.1-10%) and cosolvents (i.e. NMP; 5-80%; preferably 10-45%; see cols. 3-4)

Concerning the N-methyl-2-pyrrolidone, Sahbari teaches the following:

4. The composition of claim 3 wherein the cosolvent is selected from ethylene glycol, diethylene glycol, propylene glycol, 2-methylpropanediol, dipropylene glycol, propylene glycol monomethyl ether, propylene glycol dimethyl ether, propylene glycol n-butyl ether, dipropylene glycol monomethyl ether, dipropylene glycol dimethyl ether, dipropylene glycol n-butyl ether, tripropylene glycol monomethyl ether, propylene glycol methyl ether acetate aminoethylaminoethanol, N-methylpyrrolidone, N-ethylpyrrolidone, N-hydroxyethylpyrrolidone or N-cyclohexylpyrrolidone.(see claim 4)

Concerning the choline derivative, Sahbari teaches the following:

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The compositions of the present invention include one or more polar aprotic solvents, one or more first polymer dissolution enhancing bases selected from tetra(C.sub.1 -C.sub.6)alkylammonium hydroxide, tetra(C.sub.1 -C.sub.6)alkylammonium carbonate, tetra(C.sub.1 -C.sub.6)alkylammonium acetate, tetra(C.sub.1 -C.sub.6)alkylammonium citrate or choline hydroxide, one or more second polymer dissolution enhancing bases selected from hydroxylamine, hydroxylamine formate or hydroxylamine buffered with carboxylic acid, and optionally one or more organic additives.(see col. 3, lines 12-22)

Concerning the sulfur-containing solvent, Sahbari teaches the use of DMSO in amounts ranging from 20-99%, preferably 40-98% and more preferably 60-95% (see col. 3, lines 22-34)

Allowable Subject Matter

1. Claims 17-25 are allowed. The prior art of record fails to teach or render obvious the applicant's specific combination of the polar aprotic nitrogen containing solvent, sulfur containing solvent and specifically the use of the applicant's claimed bis-choline or tris-choline salt. Although the prior art teaches the use of choline, the applicant's specific derivatives of the choline are not taught in the prior art of record, nor are such salts commonly used in the art. As such, these claims have been found to be allowable.
2. Also of relevance as being state of the art with respect to compositions containing DMSO and NMP and/or the use of choline for cleaning semiconductors are the following references Payne (US 6,417,112), Cheng (US 6,235,693), Lee et al (US 6,825,156), Zhou et al (US 6,916,772), Sahbari et al (US 6,531,436), and Small et al (US 6,777,380).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory E. Webb
Primary Examiner
Art Unit 1751

gew